We claim:

1. Method of controlling the temperature in a fluidized bed wherein an exothermic reaction is conducted to make particulate product in a reactor containing said fluidized bed maintained by the distribution of fluid at a fluid distribution level and wherein said particulate product is withdrawn at a product withdrawal level within said fluidized bed, comprising continuously or intermittently removing from said reactor a stream of fluid, removing heat from said stream of fluid and condensing at least a portion thereof, passing said stream of fluid through a conduit segment having a first exit duct and a second exit duct to separate liquid and gas in said second exit duct from liquid and gas in said first exit duct, recycling the liquid and gas in said first exit duct to said fluid distribution level and recycling the liquid and gas in said second exit duct by a direct passage to a zone within said fluidized bed above said fluid distribution level.

2. Method of claim 1 wherein said exothermic reaction is to make a polyolefin.

3. Method of claim 1 wherein said conduit segment is an elbow, and said second exit duct is located on the outside radius of said elbow and has a smaller diameter than said first exit duct.

4. Method of claim 3 wherein said liquid and gas in said second exit duct comprise 5-30% by weight of said stream of fluid.

5. Method of claim 1 wherein the pressure differential between said fluid distribution level and said zone above said fluid distribution level is about 0.01 to about 3 psi.

6. Method of claim 1 wherein said liquid and gas in said second exit duct has a higher ratio of liquid to gas than the ratio of liquid to gas in said first exit duct

7. Method of claim 1 wherein said liquid and gas in said secondary exit duct is recycled to at least one zone within said fluidized bed above said product withdrawal level.

8. Method of claim 1 wherein said second exit duct receives a concentration of liquid from 1.01 to 3.0 times that of said stream of fluid removed from said fluidized bed after condensing.

9. Method of claim 6 wherein the ratio of liquid to gas in said second exit duct is from 1.1 to 2.5 times higher than said ratio in said fluid removed from said fluidized bed after condensing.

10. Method of claim 1 wherein said conduit segment includes at least one additional exit duct.

11. Method of recycling fluid in a fluidized bed in a polyolefin reactor, said fluidized bed being situated above distributing means for injecting fluid into said fluidized bed, comprising continuously or intermittently withdrawing fluid from said fluidized bed, cooling said fluid so withdrawn, dividing said fluid by a splitter into a primary stream and a slip stream, said slip stream having a higher ratio of liquid to gas than said primary stream, injecting said primary stream into said fluidized bed at a primary injection level, and injecting said slip stream from said splitter into said fluidized bed at a secondary injection level above said primary injection level.

12. Method of claim 11 wherein said splitter is an elbow.

13. Method of claim 11 wherein said primary injection level is at the level of said distributing means and said slip stream is injected through a direct passage into said fluidized bed at least 12 inches above said distributing means.

14. Method of claim 11 wherein said slip stream is enriched in liquid by at least 10% over said withdrawn fluid.

15. Fluid recycle apparatus for a fluidized bed polyolefin reactor comprising a conduit for removing recycle fluid from said reactor,

compressor means in said conduit for compressing fluid therein, cooler means in said conduit for cooling fluid therein, and a splitter having a primary outlet and at least one slip stream conduit, for receiving partially condensed recycle fluid from said cooler means and returning it by said primary outlet portion to a level below said fluidized bed and by said slip stream conduit through a direct passage to a reaction zone within said fluidized bed.

16. Fluid recycle apparatus of claim 15 wherein said slip stream conduit has a hydraulic diameter of 5% to 30% of the diameter of said primary outlet.

17. Method of increasing the production capability of a fluidized bed olefin polymerization reactor which (a) removes and recycles fluid for removal of the heat of reaction, said fluid being returned to a level in said reactor below said fluidized bed, and (b) removes product at a product withdrawal level through a conduit at least partially by differential pressure to a product discharge tank, wherein the vaporization of liquid carried with said product into said product discharge tank tends to reduce said differential pressure, comprising

passing said recycle fluid through a fluid stream splitter to divide said recycle fluid into a primary stream for return to a level in said reactor below said fluidized bed, and a smaller, secondary stream, said secondary stream having a liquid content, in percent, about 1.01 to about 3.0 times the liquid content, in percent, of said recycle fluid, and injecting said secondary stream by a direct passage into said reactor above said product withdrawal level, whereby the amount of liquid carried out of said reactor with said product is reduced and reduction in said differential pressure is inhibited.

18. Method of maintaining the quantity of liquid below a predetermined limit in a product discharge tank of a fluidized bed olefin polymerization process, which process includes a fluid recycle to the bottom of said fluidized bed and a product discharge conduit above said bottom, **comprising** continuously or

intermittently monitoring the amount of liquid in said product discharge tank, and continuously or intermittently diverting liquid from said fluidized recycle to a point higher than said product discharge conduit in said bed in amounts effective for maintaining said quantity of liquid below said predetermined limit in said product discharge tank.

19. Method of claim 18 wherein said monitoring of the amount of liquid in said product discharge tank is conducted by monitoring the pressure in said product discharge tank and correlating said pressure to a liquid amount.

20. Method of claim 18 wherein said fluid recycle comprises at least 25% condensing.

21. Method of claim 18 wherein said olefin comprises ethylene.

22. Method of claim 18 wherein said olefin comprises propylene.

23. Method of claim 18 wherein said fluidized bed olefin polymerization process employs two product discharge tanks.

24. Method of claim 23 including the step of pressure equalization between said two product discharge tanks when neither of said product discharge tanks is receiving product.

25. Method of claim 18 wherein said amount of liquid in said product discharge tank is monitored by inference from at least one pressure in said product discharge tank.

26. Method of conserving unreacted monomer which would otherwise be removed, at a product withdrawal level, with particulate product from a fluidized bed polymerization reactor having a distribution plate for incoming

fluid, said reactor being operated in the condensing mode, wherein fluid is recycled from said reactor to remove the heat of reaction by condensing a selected percentage of said fluid to obtain a liquid, **comprising** injecting a portion of said liquid above said product withdrawal level, said portion being correlated to said percentage by a model of said process.

27. Method of claim 26 wherein said particulate product is removed through conduits from said reactor at said product withdrawal level to two product discharge tanks A and B at least partly by differences in pressure between said reactor and said product discharge tanks A and B, including the steps of alternating product discharge between product discharge tanks A and B, alternately substantially emptying particulate product from said product discharge tanks A and B, and alternately substantially equalizing pressures between product discharge tanks A and B.

28. Method of claim 27 wherein said portion of liquid is modified by a factor representing liquid in at least one of said tanks A and B.

29. Method of claim 27 wherein said portion of liquid is modified by a factor representing pressure in at least one of said tanks A and B.

30. Method of claim 29 wherein said factor is derived from a model of the operation of said reactor.

31. Method of claim 29 wherein said factor is derived from monitored pressure in said at least one of said tanks A and B.

32. Method of increasing the product removal capability of a fluidized bed olefin polymerization reactor operating in the condensing mode and including a particulate product takeoff conduit substantially above the bottom of said fluidized bed, which particulate product takeoff conduit leads to a product

discharge tank, **comprising** manipulating the ratio of liquid recycled to a point below said fluidized bed to that injected above said product takeoff conduit according to a model of said reactor to maintain the pressure in said discharge tank at at least one desired level throughout a product discharge, whereby the product discharge cycle is maintained within desired time limits and said product removal capability is not substantially constrained by said desired time limits.

33. Method of claim 32 wherein said polymerization reactor includes two product takeoff conduits, each leading to a product discharge tank.

34. Method of claim 33 including equalizing pressures in said product discharge tanks when one of said product discharge tanks contains particulate product and the other of said product discharge tanks is substantially empty of particulate product.

35. Method of claim 33 wherein said polymerization reactor includes at least one additional product takeoff conduit leading to at least one additional product discharge tank.

36. Method of optimizing product removal capacity of an olefin polymerization reactor operating as a fluidized bed in the condensing mode and having at least two product discharge tanks, while also optimizing raw material conservation during product removal **comprising** manipulating the ratio of liquid recycled to the bottom of said fluidized bed to liquid injected above a point of product removal from said fluidized bed as a function of at least one pressure monitored in said discharge tanks, and intermittently venting one discharge tank to another discharge tank, whereby optimum efficiency is achieved balancing the rate of product removal and the conservation of raw material.

37. Method of claim 36 wherein said raw material comprises ethylene.

38. Method of claim 36 wherein said olefin comprises propylene.

39. Method of controlling recycle split of a polymerization reactor operating in the condensing mode, at at least 25 percent condensing, comprising controlling said recycle split as a function of liquid in at least one product discharge tank.